



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,258	04/01/2004	Takashi Ito	251288US2	6972
22850 7590 06/21/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER ZERVIGON, RUDY	
			ART UNIT 1763	PAPER NUMBER
			NOTIFICATION DATE 06/21/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/814,258

Applicant(s)

ITO, TAKASHI

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-21 is/are pending in the application.
- 4a) Of the above claim(s) 11-18 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10, 19 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 30, 2007 has been entered.

Claim Objections

2. Claim 10 is objected to because of the following informalities: Claim 10 was amended to remove "claims" and should only remove "s" from "claims". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-6, 10, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairbairn; Kevin et al. (US 5838121 A) in view of Suzuki; Akira et al. (US 5522934 A). Fairbairn teaches a processing apparatus (Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), comprising: a transfer chamber (104; Figure 4; column 4, lines 35-55); a plurality of processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) for processing therein a substrate ("wafer"; throughout) to be processed, the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) being coupled to the transfer chamber (104; Figure 4; column 4, lines 35-55); a plurality of shower heads (642; Figure

Art Unit: 1763

19; - see common "106"; column 4, lines 35-55), installed at upper parts of the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), for providing a gas to be converted into a plasma in the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55); a number of electrostatic chucks ("pedestal 628"; Figure 19; column 14, lines 50-55; column 12; line 15) which are provided in the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), to electrostatically adsorb the substrate ("wafer"; throughout) to be processed thereto; a transfer mechanism (500; Figure 15; column 8, line 53 - column 9, line 4) installed in the transfer chamber (104; Figure 4; column 4, lines 35-55) to transfer the substrate ("wafer"; throughout) to be processed between the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) and the transfer chamber (104; Figure 4; column 4, lines 35-55); and a monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40) for providing dissociated monatomic nitrogen (column 20, lines 12-13) atoms in the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), wherein the monatomic nitrogen (column 20, lines 12-13) atoms are supplied into one of the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) after finishing processing the substrate therein to remove charge on an electrostatic chuck ("pedestal 628"; Figure 19; column 14, lines 50-55; column 12; line 15) provided in said one processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), wherein the monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40) includes a pipe (812; Figure 24; column 18, lines 20-25) communicating with each processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), an N₂ gas

Art Unit: 1763

supply source (804/814; Figure 24; column 18, lines 20-25) for providing an N₂ gas through the pipe (812; Figure 24; column 18, lines 20-25), and an energy supply unit (808; Figure 23,24; column 18, lines 18-40) for applying energy to the N₂ gas in the pipe (812; Figure 24; column 18, lines 20-25) or in the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) to convert the N₂ gas into the dissociated monatomic nitrogen (column 20, lines 12-13) atoms as claimed by claim 1. Applicant's claim requirements of "after finishing processing the substrate therein to remove charge on an electrostatic chuck" are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Fairbairn further teaches:

- i. A processing apparatus (Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), comprising: a transfer chamber (104; Figure 4; column 4, lines 35-55); a processing chamber (first 106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) coupled to the transfer chamber (104; Figure 4; column 4, lines 35-55), the processing chamber (first 106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) performing therein a first process on a substrate ("wafer"; throughout) to be processed; a

Art Unit: 1763

shower head (642; Figure 19; - see common "106"; column 4, lines 35-55), installed at upper parts of the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), for providing a gas to be converted into a plasma in the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55); a transfer mechanism (500; Figure 15; column 8, line 53 - column 9, line 4) installed in the transfer chamber (104; Figure 4; column 4, lines 35-55) for sequentially transferring the substrate ("wafer"; throughout) to be processed into the processing chamber; an electrostatic chuck ("pedestal 628"; Figure 19; column 14, lines 50-55; column 12; line 15) provided in the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), the electrostatic chuck ("pedestal 628"; Figure 19; column 14, lines 50-55; column 12; line 15) electrostatically adsorbing thereto the substrate ("wafer"; throughout) to be processed; and a monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40) for providing dissociated monatomic nitrogen (column 20, lines 12-13) atoms in the first and second processing chamber (second 106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), wherein the monatomic nitrogen (column 20, lines 12-13) atoms are supplied into the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) after finishing processing the substrate therein to remove charge on an electrostatic chuck ("pedestal 628"; Figure 19; column 14, lines 50-55; column 12; line 15) provided in the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), wherein the monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40) includes a pipe (812; Figure

Art Unit: 1763

- 24; column 18, lines 20-25) communicating with each processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), an N₂ gas supply source (804/814; Figure 24; column 18, lines 20-25) for providing an N₂ gas through the pipe (812; Figure 24; column 18, lines 20-25), and an energy supply unit (808; Figure 23,24; column 18, lines 18-40) for applying energy to the N₂ gas in the pipe (812; Figure 24; column 18, lines 20-25) or in the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) to convert the N₂ gas into the dissociated monatomic nitrogen (column 20, lines 12-13) atoms - claim 2. Applicant's claim requirements of "after finishing processing the substrate therein to remove charge on an electrostatic chuck" are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- ii. The processing apparatus (Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) of claim 1, wherein the monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40) supplies the dissociated monatomic nitrogen (column 20, lines 12-13) atoms to a close proximity of the electrostatic chuck

Art Unit: 1763

(“pedestal 628”; Figure 19; column 14, lines 50-55; column 12; line 15), as claimed by claim 3

- iii. The processing apparatus (Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55) of claim 2, wherein the monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40) supplies the dissociated monatomic nitrogen (column 20, lines 12-13) atoms to a close proximity of the electrostatic chuck (“pedestal 628”; Figure 19; column 14, lines 50-55; column 12; line 15), as claimed by claim 4
- iv. The processing apparatus (Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55) of claim 2, wherein the monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40) provides the dissociated monatomic nitrogen (column 20, lines 12-13) atoms in the transfer chamber (104; Figure 4; column 4, lines 35-55), as claimed by claim 5. Applicant’s claim requirement is an intended use claim requirement. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02). When the structure recited in the reference is substantially

Art Unit: 1763

identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

- v. The processing apparatus (Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) of claim 2, further comprising a controller (810; Figure 24; column 18, lines 20-25) for controlling a supply timing of the dissociated monatomic nitrogen (column 20, lines 12-13) atoms from the monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40), as claimed by claim 6
- vi. The processing apparatus (Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) of claim 2, wherein the energy supply unit (808; Figure 23,24; column 18, lines 18-40) applies energy which is higher than the dissociation energy of the N₂ gas and lower than the ionization energy of the N₂ gas, to the N₂ gas, as claimed by claim 10
- vii. A processing apparatus (Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), comprising: a processing chamber for processing therein a substrate ("wafer"; throughout) to be processed; a shower head (642; Figure 19; - see common "106"; column 4, lines 35-55), installed at upper parts of the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), for providing a gas to be converted into a plasma in the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55); a transfer mechanism (500; Figure 15; column 8, line 53 - column 9, line 4) for transferring the substrate to be processed into the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55); an electrostatic chuck ("pedestal 628"; Figure 19; column 14, lines 50-55; column 12; line 15) installed in the processing chamber (106; Figure 4, 19, and 24; - see common

Art Unit: 1763

“106”; column 4, lines 35-55), for adsorbing the substrate (“wafer”; throughout) to be process thereto; and a monatomic nitrogen atom supply unit (800; Figure 23,24; column 18, lines 18-40) for providing dissociated monatomic nitrogen atoms in the processing chamber (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55) wherein the monatomic nitrogen atoms are provided in the processing chamber (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55) after finishing processing the substrate therein, wherein the monatomic nitrogen (column 20, lines 12-13) atom supply unit (800; Figure 23,24; column 18, lines 18-40) includes a pipe (812; Figure 24; column 18, lines 20-25) communicating with the processing chambers (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55), an N₂ gas supply source (804/814; Figure 24; column 18, lines 20-25) for providing an N₂ gas through the pipe (812; Figure 24; column 18, lines 20-25), and an energy supply unit (808; Figure 23,24; column 18, lines 18-40) for applying energy to the N₂ gas in the pipe (812; Figure 24; column 18, lines 20-25) or in the processing chambers (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55) to convert the N₂ gas into the dissociated monatomic nitrogen (column 20, lines 12-13) atoms, - claim 19. Applicant’s claim requirements of “monatomic nitrogen atoms are provided in the processing chamber after finishing processing the substrate therein” are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention

Art Unit: 1763

and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Fairbairn does not teach Fairbairn's pipe (812; Figure 24; column 18, lines 20-25) communicates with each processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) through a sidewall of each of said processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55).

Suzuki teaches a plasma processing apparatus (figures 1,2) including process gas piping (34A-C; Figure 1,2) injected through a sidewall (4; Figure 1,2) of each of said processing chamber (4; Figure 1,2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Fairbairn to add additional process gas injection along a sidewall of Fairbairn's chamber as taught by Suzuki.

Motivation for Fairbairn to add additional process gas injection along a sidewall of Fairbairn's chamber as taught by Suzuki is for delivering process gases uniformly as taught by Suzuki (column 6; lines 1-9).

5. Claims 8, 9, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairbairn; Kevin et al. (US 5838121 A) and Suzuki; Akira et al. (US 5522934 A) in view of Lee; Chung J. et al. (US 6086679 A). Fairbairn and Suzuki are discussed above.

Fairbairn further teaches a processing apparatus (Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), which includes a processing chamber (106; Figure 4, 19, and 24; - see

Art Unit: 1763

common “106”; column 4, lines 35-55) for processing a substrate (“wafer”; throughout) to be processed, a shower head (642; Figure 19; - see common “106”; column 4, lines 35-55), installed at upper parts of the processing chamber (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55), for providing a gas to be converted into a plasma in the processing chamber (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55); and an electrostatic chuck (“pedestal 628”; Figure 19; column 14, lines 50-55; column 12; line 15), installed in the processing chamber (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55), for adsorbing the substrate (“wafer”; throughout) to be processed thereto, comprising: - claim 21

- a. means for transferring the substrate (“wafer”; throughout) to be processed into the processing chamber – claim 21. Support for this portion of claim 21 is found in section [0031]. Specifically, the specification teaches “wafer transfer mechanism 6”. Fairbairn teaches a wafer transfer mechanism 500. As such, Fairbairn teaches an equivalent apparatus that performs the function of transferring wafers. As a result, Fairbairn’s prior art elements of 500; Figure 15; column 8, line 53 - column 9, line 4 for transferring wafers performs the identical function of transferring wafers in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183).
- b. means for adsorbing the substrate (“wafer”; throughout) to be processed to the electrostatic chuck – claim 21. Support for this portion of claim 21 is found in section [0010]. Specifically, the specification teaches “the electrostatic chuck electrostatically adsorbing thereto the substrate to be processed”. Fairbairn

teaches an electrostatic chuck (“pedestal 628”; Figure 19; column 14, lines 50-55; column 12; line 15). As such, Fairbairn teaches an equivalent apparatus that performs the function of “adsorbing the substrate”. As a result, Fairbairn’s prior art elements of 628 for “adsorbing the substrate” perform the identical function of “adsorbing the substrate” in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183).

Fairbairn does not teach:

- i. The processing apparatus (Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55) of claim 2, wherein the energy supply unit (808; Figure 23,24; column 18, lines 18-40) has an ultraviolet irradiation unit for irradiating ultraviolet ray to the N₂ gas, as claimed by claim 8
- ii. The processing apparatus (Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55) of claim 2, wherein the pipe (812; Figure 24; column 18, lines 20-25) has a dielectric portion, and the energy supply unit (808; Figure 23,24; column 18, lines 18-40) has an induction coil wound around the dielectric portion and a high frequency power supply for applying a high frequency to the induction coil, as claimed by claim 9
- iii. means for providing dissociated monatomic nitrogen atoms in the processing chamber (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55), wherein the monatomic nitrogen atoms are provided in the processing chamber (106; Figure 4, 19, and 24; - see common “106”; column 4, lines 35-55) for processing the substrate (“wafer”; throughout) therein, wherein the means for providing dissociated monatomic

Art Unit: 1763

nitrogen (column 20, lines 12-13) atoms includes a pipe (812; Figure 24; column 18, lines 20-25) communicating with the processing chambers (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) through a sidewall of the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55), an N₂ gas supply source (804/814; Figure 24; column 18, lines 20-25) for providing an N₂ gas through the pipe (812; Figure 24; column 18, lines 20-25), and an energy supply unit (808; Figure 23,24; column 18, lines 18-40) for applying energy to the N₂ gas in the pipe (812; Figure 24; column 18, lines 20-25) to convert the N₂ gas into the dissociated monatomic nitrogen (column 20, lines 12-13) atoms – claim 21

Lee teaches energy supply units as UV (426, Figure 4) and induction coil supply units (626, 628; Figure 6) wound a dielectric pipe (620; Figure 6). Means for providing dissociated monatomic nitrogen atoms in the processing chamber, wherein the monatomic nitrogen atoms are provided in the processing chamber (106; Figure 4, 19, and 24; - see common "106"; column 4, lines 35-55) for processing the substrate ("wafer"; throughout) therein – claim 21. Support for this portion of claim 21 is found in section [0061]. Specifically, the specification teaches "In addition, an induction coil 96 is wound around the gas pipe 93, and the high frequency power is applied from a high frequency power supply 97 to the induction coil 96.". Lee teaches an induction coil 628 is wound around the gas pipe 620, and the high frequency power is applied from a high frequency power supply 626 to the induction coil 628. As such, Lee teaches an equivalent apparatus that performs the function of means for providing dissociated gas (gas identity is intended use). As a result, Fairbairn's prior art elements of 628, 620, and 626 for providing dissociated gas (gas identity is intended use) perform the identical function of providing dissociated gas (gas identity

Art Unit: 1763

is intended use) in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183).

Sukuki is discussed above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Fairbairn to use alternate and equivalent means for plasma generation as taught by Lee.

Motivation for Fairbairn to use alternate and equivalent means for plasma generation is taught by Lee (column 22, line 58 – column 25, line 50).

Response to Arguments

6. Applicant's arguments with respect to claims 1-6, 8-10, 19, and 21 have been considered but are moot in view of the new grounds of rejection.

Art Unit: 1763

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Rudy Zervigon
6/14/7